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AUTHOR Johnson, Richard R.
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ABSTRACT

A survey carried out to test the reliability of college and university ranking methods is reported. A questionnaire sent to all college and university deans in the United States asked for the names and ratings of five institutions felt to be: (1) influential in the present structure of the respondent's institution; (2) most useful if consulted for assistance in program development; (3) most influential, nationally, on educational programs of other institutions; (4) most like the respondent's institution; (5) most innovative in their programs; and (6) most widely-reputed for their innovation. A significant result was that no single group of institutions was referred to by all respondents or having to do with all questions. The concentration on a small cluster of highly-rated institutions was most pronounced among doctoral-granting universities. State, regional, sector (public or private), and institution-type (two-year, liberal arts, comprehensive, or doctoral) loyalties are examined. While the dataset was not large, and the sampling technique used was not the best, the survey's results call into question what appear to be widely-held assumptions about the ranking of institutions. The data suggest that "leadership" among institutions is not unitary; an institution that leads in prestige or scholarship may not necessarily lead in educational innovation or strongly influence other institutions in this same area.
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INNOVATION AND INFLUENCE

AMONG

AMERICAN COLLEGES AND UNIVERSITIES

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INNOVATION AND INFLUENCE AMONG AMERICAN COLLEGES AND UNIVERSITIES

Among the many things that are widely "known" about American higher education is that there are some institutions which "lead the academic procession". A great deal of controversy has been generated over studies which have ranked institutions by peer judgments of graduate programs (Blau and Margulies 1974, Cartter 1966, Cartter and Solmon 1977, Cole and Lipton 1977, Hartnett et al 1978, Ladd and Lipset 1978, Margulies and Blau 1973 and Roose and Andersen 1970). The criticisms (Cox and Catt 78, Dolan 1976) have largely focused on the methods of ranking without questioning the fact that there is a pecking order among institutions. This is hardly surprising. Every academic worth his or her salt can quickly generate a list of the leading institutions during the social hour at the annual professional meeting. These lists, generated without much hesitation and propounded with a good degree of certitude, vary somewhat depending upon their source.

But the existence of such rankings, whether developed formally through research studies or informally by the common knowledge grapevine, is more important than the mere academic gossip it appears to represent. The underlying attitudes about pecking orders may influence the shape of other academic institutions "further down the list". Potential students (and faculty) are undoubtedly influenced in their choice of a college or university by such rankings (see McGee,1971). Certainly some

foundations and federal granting programs take into account this "common knowledge" clustering of institutional types in funding projects. To the extent that these rankings affect the distribution of students, faculty and resources across institutions rather than merely reflecting the outcome of this differential distribution, it would seem important to examine how they are produced and what the appropriate scope of their use should be.

Much of the past literature on "leading" academic programs and institutions has implied that leadership is unitary. However, there are at least three senses in which the term "leading" can be used; (1) prestige - the degree to which an institution is looked up to or admired; (2) innovation - the likelihood that an institution will be first in generating new ideas or programs; (3) influence - the degree to which other institutions follow the leading institution's example. While a given institution may lead in all three senses, leadership in one sense does not necessarily imply leadership in the other two. In addition, institutions and their programs are multi-faceted. Leadership in one aspect of a program may not go hand-in-hand with leadership in other aspects. Leadership in research and scholarship may not go hand-in-hand with leadership in the educational program (note Hartnett et al 1978). The study reported below differed from prior reputational rating surveys in that it was designed to test the limits of the utility of

the concept of "leadership" in describing American institutions of higher education. Specifically: 1) the survey questions asked for independent rankings related to the three different senses of "leadership". 2) The focus of the survey was on educational programs as opposed to quality of faculty, research productivity, etc. 3) And, the population sampled was all the major types of institutions of higher education rather than the more usual survey of individuals representing graduate institutions.

There is a model of relationships among institutions implied by the activity of reputational rating. Perhaps this model is most clearly stated in David Riesman's essay "The Academic Procession". He uses the metaphor of a snake progressing across the ground to represent the array of American academic institutions. There are those in the head who lead, while others in the middle follow and emulate the leaders. Still others in the tail are carried along by the movement of the whole, but are largely out of touch with the head and in a state of torpor. This model of relationship among institutions implies that there is a small set of institutions that lead in at least two senses. First, they lead in innovation by being among the first to develop or adopt new ideas, i.e. move in a new direction. Second, they lead in the sense of influence, i.e. other institutions follow their example. This "trickle-down" model of relationship among institutions I call the "national

institutions" model. It implies that there is a small net of institutions which are widely recognized nationally as leaders.

A second possible model of relationship among institutions can be generated by extending the research on "invisible colleges" in fields of scholarship (e.g. Crane 1972). This concept has been used to suggest that there are groups of individuals within particular fields of scholarship who read each other's work, communicate about new developments in their own thinking and research, and thus form a kind of "in group" or extended team working in a particular area of scholarship. Recent research has examined citation networks to look for groups of scholars with strong tendencies to cross-cite each other's work (e.g. Cole 1962, Narim 1976). If the "invisible colleges" of individual scholars are mirrored by similar clusters in educational innovation among institutions, then one would expect a considerably different pattern of relationships among institutions than that predicted by the "national institutions" model. Extrapolation of the "invisible colleges" model to institutions suggests that there will be not one, but several clusters of institutions, with high levels of cross reference within a cluster and two-way attribution of influence as opposed to the "trickle-down" relationship implied by the "national institutions" model.

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Method and Procedure

Every study is conducted within constraints. One determination to be made at the time a study is contemplated is the level of investment (in time and money) to be allocated to collect a given kind of data to answer a particular question. A full-blown, orthodox survey of educational program leadership which attempted to replicate Cartter's method of data collection while extending the population to all colleges and universities, was not possible. Even a proper pilot study with a stratified, random sample of higher education institutions by type and region, with attention to acceptable response rates and appropriate reliability seemed unjustified. The most direct way to study which institutions provide leadership in developing educational innovations, or which are in the forefront in influencing other institutions would be to analyze the origins and subsequent transfer of various educational innovations. The reputational rating technique appears to be a particularly blunt instrument for uncovering this particular kind of information. But the use of this technique was mandated by the focus of my study, i.e. I was attempting to delineate the limits of applicability of reputational ratings. This leads to an interesting problem in deciding on an appropriate design and justifiable expenditure in relation to the question at hand.

I can illustrate the problem by analogy. One could develop a survey to ascertain whether it is presently raining in a given locale. It might be cogently argued that a better procedure

would involve checking a rain gauge or even looking out the window. However, if the purpose of the study were to test the applicability of survey techniques, then questions about whether it is presently raining would be appropriately asked, even though this is not the best information concerning the actual state of the weather. However, although running such a survey is a rational procedure under these conditions, one could seriously question the level of expenditure that ought to be made for such an effort.

It was for this reason that a quasi-experimental design, labeled by engineers the "quick and dirty" method, was used. This research design is only appropriate under certain circumstances. First, one must be looking for order-of-magnitude differences rather than second-decimal curve-fits. Second, there must be strong predictions from background knowledge of how the results should turn out in the new application (i.e. no pallid, ad hoc "hypothesis" generated merely for "falsification"). Third, the problem studied must yield data robust enough so that "dirty test tubes", "eyeballed" for results could produce definitive answers.

The many studies using the reputational rating method on the scholarly ranking of doctoral-granting institutions suggest that these ratings are quite stable. While there are differences between the original Cartter study and the follow-up Roose and Andersen report, the similarity among the group of institutions with the top rankings is striking. Other more recent studies (Cartter and Solomon 1977, Cole and Lipton 1977, Ladd

and Lipset 1978, Margulies and Blau 1973) largely confirm the cluster of institutions reputed to be at the top. Thus, the reputational rating technique yields robust data and past studies provide a reliable list of institutions that are expected to occupy the top grouping. It was only because of these factors that I had the temerity not only to carry out, but also to report the results of the "quick and dirty" study described below.

The study was initiated by having a form letter and questionnaire (see note 1 for the questions asked) mailed to "all" college presidents and deans by a commercial mailing house. A follow-up mailing to non-respondents two months later was used to increase the response rate. However, given the mass-mailing character of the materials to important, busy people it is not surprising that the response rate was low. The total responses (N=631 with 544 usable for citation analysis) represent roughly 1 in 5 of all institutions of higher education responding. This, of course, raises serious questions about the representativeness of the "sample" of responding institutions.

I examined possible over or under representation of particular types of institutions by geographic region, type of institutional control and type of institution as categorized by the Carnegie commission. There were no significant differences among the proportions of institutions responding across all

of these categories (see note 2). Thus, although the respondents are not a true random sample of institutions of higher education, they are not biased in any obvious way in representing the various types of institutions.

The data was analyzed by tabulating citations across the various questions without regard to the relative ordering of up to five institutions which could be cited for each of the questions. Because the questions called for citation of other institutions, no self-citations were counted. A number of citations were to university systems, educational associations, etc. However, because of the broad scatter of these citations they were not tabulated as separate categories.

RESULTS

Perhaps the most striking aspect of the data generated by this survey was that the respondents cited different institutions depending upon the questions asked. There was no single set of referenced institutions enumerated in relation to all the questions asked.

When asked which other institutions were most like the responding institution, the pattern of citations matched quite well the respondent's own institution (see Table I below).

RRJ D13/A10

Table 1

Institutions Most Like My Institution

Respondent	Proportion of Institutions Cited by Type 1	2	3	4
1. Doctoral University	.93	.04	.02	.00
2. Comprehensive University	.19	.64	.15	.01
3. Liberal Arts College	.04	.12	.85	.00
4. Community College	.04	.04	.07	.85

One interesting finding is that either the category "comprehensive colleges and universities" includes a more diverse set of institutions or this type of institution may have a less circumscribed reference group.

When asked to cite institutions influential at the national level, the respondents replied with a list similar to prior reputational ratings surveys. The concentration of citations on a small cluster of "top" institutions was most pronounced among doctoral granting universities with a declining degree of concentration of citations across the other Carnegie categories (see Table 2 below).

RRJ D13/A11

Table 2

Institutions Which Have the Most Influence Nationally

Respondent	Proportion of Institutions Cited by Type 1	2	3	4
1. Doctoral University	.97	.01	.02	.00
2. Comprehensive University	.93	.03	.04	.00
3. Liberal Arts College	.85	.03	.12	.00
4. Community College	.81	.02	.02	.14

The concentration on a small group of institutions was even greater than indicated above, however. Among doctoral granting institutions, 84% of the citations named ten specific institutions. Among comprehensive colleges and universities, 75% of the responses were to a similar list of ten institutions. Liberal arts colleges concentrated 71% of their references on such a list and community colleges provided 52% of their responses to their list of "top ten" institutions. While the separate lists of the "top ten" institutions varied somewhat (particularly in the specific rank given to an individual institution) by the type of institution responding, the similarities among the lists were striking. There was complete agreement on eight of the "top ten" institutions cited by respondents from all four types of institutions. It is also interesting to note that the list of institutions generated in this way overlaps significantly with reputational ratings

generated by prior studies of leading graduate programs (see note 3). These data seem to confirm the "national institutions" model of influence. It is particularly interesting that it is not only individuals from doctoral granting institutions (the group sampled in prior surveys) who recognize this small set of "leading" institutions. Across all three other Carnegie categories of institutional types, these same institutions are cited.

On all other other questions in the survey, however, there was little evidence for the "national institutions" model. When asked about specific institutions that had influenced their institution in the past, or might be consulted presently, the respondents shifted to a new set of citations. The previously referenced "top ten" cluster of institutions accounted for less than 7% of all references when individuals were queried about "which colleges or universities might you consider consulting or examining (presently) as a model." The institution which was at the top of the list when individuals were asked about nationally influential schools was not even mentioned by over 95% of all respondents. These data demonstrate an interesting paradox. The same individuals that agreed upon institutions which have a reputation for influence nationally were unlikely to report the same institutions as perceived sources of influence on their own college or university.

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It is possible that the respondents recognized national, leading institutions, but tended to look to institutions closer to home when examining other model educational programs or consulting with other institutions. If this is the case, we might expect a regional hierarchy for institutions in a particular area. Such regional clusters when added together could account for the broad scatter of citations on these questions. Analysis of the citations by HEW region did not lead to new sets of specific "regional institutions." However, further analysis did show geographic influence on citations.

With no ready access to information about mileage distances between colleges and universities, I chose to use smaller "regions" as an index. For each institution responding, the number of citations within the same state vs. those to all other states were counted. In order to analyze these data, it is necessary to correct for the differential distribution of institutions across states. This was done by counting the number of institutions within a state which might potentially be cited vs. all other institutions in the country. Then, the actual citations within a state were compared with this baseline to produce a citation ratio. A citation ratio of 1.0 indicates that the proportion of institutions cited within the state is equivalent to the proportion of institutions located within that state. Across all the questions asked and all the types of institutions, the citation ratios were considerably above 1.0. This indicates that institutions were more likely

to refer to other institutions within their state than all other institutions of higher education. What is more interesting, however, is the fact that these citation ratios varied across the questions asked and also varied by the type of institution responding (see Table 3 below).

Table 3

Citation Ratios* to Institutions Within the Same State

Respondent	Question Concerning: National Influence	Present Influence	Innovative	Like Own Institution
1. Doctoral University	1.7	3.2	3.2	3.8
2. Comprehensive University	1.8	9.4	4.2	11.5
3. Liberal Arts College	2.2	10.4	3.7	9.7
4. Community College	3.6	15.2	8.8	15.6

* A ratio of 1.0 indicates that the proportion of citations to institutions within the same state equals the proportion of institutions which are located within that state

All types of institutions were least likely to cite other institutions within their own state when asked to name institutions which have a national influence. They were also somewhat less likely to refer to institutions within their own state when asked to list innovative institutions or institutions which have a reputation for being innovative. All types of institutions were most likely to refer to other institutions within their

own state when asked to list other institutions that are like them, or institutions which have had influence or presently influence their educational program.

The data also show that respondents from the different types of institutions have different propensities to cite other institutions within their own geographic region. Community colleges were roughly 3 to 5 times more likely to refer to other institutions within their same state as are doctoral granting institutions. This difference was consistent across all six questions. Comprehensive colleges and universities and liberal arts colleges were less likely to refer to other institutions within their same state than 2-year colleges, but in general more likely to refer to such institutions than doctoral granting institutions. These data suggest that the reference group or knowledge base for community colleges is more affected by regionalism than is the case for four-year institutions. Conversely, doctoral institutions appear to be more likely to have a national focus or reference group.

However, the shift in citations on all questions other than the one concerning national incluence cannot be explained by increased tendencies to cite institutions within the same region. A second factor which appears to be operating is a tendency for the respondents to cite institutions more like their own institution. This tendency, which was most pronounced among

liberal arts colleges, was apparent across all Carnegie categories (see Table 4).

Table 4

Institutions Presently Influential

Respondent	Proportion of Institutions Cited by Type 1	2	3	4
1. Doctoral University	.94	.01	.06	.00
2. Comprehensive University	.53	.28	.17	.01
3. Liberal Arts College	.22	.15	.61	.02
4. Community College	.28	.16	.06	.49

When asked about nationally influential institutions, liberal arts colleges cited other liberal arts colleges only 12% of the time. When asked about other institutions that influence them, 61% of the citations were to other liberal arts colleges. Thus, when we talk about leadership in the sense of direct influence on educational programs, the "national institutions" model does not fit the data. The "leading" institutions in this sense are typically drawn from other colleges and universities closer to home and more similar in characteristics to the citing institution Among comprehensive colleges and universities the shift toward institutions of their own Carnegie type was somewhat less than that among liberal arts colleges and community colleges. Even, the strong tendency to cite

doctoral universities among doctoral institutions and the somewhat weaker tendency among comprehensive colleges and universities did not support the "national institutions" model. The institutions cited were not the same small "top ten" group, but rather a wider spectrum of institutions of this type.

When the citations of the respondents were analyzed to see if public or private control of the institution influenced citations, the data showed a strong tendency for institutions to cite others with similar control (see Table 5). On all questions asked, public institutions tended to cite other public institutions and private institutions to cite private institutions. There were, however, variations related to the question asked and the type of institution responding.

Table 5

Proportion of Citations to Institutions with Similar Control

	Question Concerning			
Control	National Influence	Present Influence	Innovative	Like Own Institution
Public	.52	.89	.72	.96
Private	.67	.77	.70	.91

For example, public community colleges had the strongest tendency to cite other public-controlled institutions across all questions. This tendency showed up even when citations to other community colleges were not counted. Interestingly enough, the small group of private two-year institutions responding

also tended to cite the public sector far more heavily than any other type of private institution. The strongest tendencies to cite institutions in the other sector for all respondents occurred when respondents named institutions having national influence or institutions which are innovative. The strong convergence of citations on a relatively small list of "national" institutions (which included both public and private universities) meant that respondents representing institutions from both sectors were more likely to cite institutions in the other sector on this question.

When asked about which institutions they deem innovative, or which have a national reputation for innovation, a third pattern of citations emerged among the respondents. All three types of four-year institutions cited liberal arts colleges more than any other type of institution (See Table 6). The greatest bulk of these references were to the Carnegie subcategory 3.1 (labeled "selective" in admissions or "leading" in baccalaureate origin of Ph.D.'s). The concentration of citations of liberal arts colleges was particularly striking for doctoral granting institutions. These universities were most likely to cite other doctoral granting universities on all other questions in the survey. Only when asked about innovation did they shift their citation pattern to reference liberal arts colleges heavily.

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Table 6

Institutions Regarded as Innovative

Respondent	Proportion of Institutions Cited by Type 1	2	3	4
1. Doctoral University	.24	.22	.52	.02
2. Comprehensive University	.29	.24	.44	.02
3. Liberal Arts College	.20	.17	.62	.02
4. Community College	.20	.09	.13	.58

In spite of relatively strong agreement on the type of institutions cited as innovative among four-year institutions, there was little agreement on specific institutions.[4] Furthermore, the pattern of citing liberal arts colleges among four-year colleges and universities did not appear among community colleges. Fifty-eight percent of the references from two-year institutions were to other community colleges and only 13 percent were to liberal arts colleges. The disjunction between the four-year and two-year institutions can also be illustrated by noting that fewer than two percent of the citations of innovative institutions by four-year institutions named community colleges. Thus, four-year institutions were unlikely to cite innovation in community colleges and, conversely, two-year institutions mostly cited community colleges.

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Discussion

In discussing the implications of these data, it is important to state first the conclusions which can not be drawn from them. Given the sampling technique and response rate no reliable or valid new set of reputational ratings can be generated. This is why the names of highly "ranked" institutions appear only in footnotes. They have been included only to allow the reader to compare these named institutions with the names appearing in other reputational ratings studies.

However, while the dataset was not large and the sampling technique leaves much to be desired, the results of the study call into serious question what appear to be relatively widely held operating assumptions about the ranking of institutions. The data suggest that the concept of "leadership" among institutions is not unitary. They imply that an institution that leads in prestige or scholarship may not necessarily lead in innovation in its educational program or strongly influence other institutions in this same area.

However, even if the concept of leadership is not unitary, this does not rule out the "national institutions" model. There could be separate, different lists of "national institutions" for each of the senses of the term. But the data do not support this. Rather, the model appears to fit only when leadership in the sense of prestige and visibility is

being discussed. Thus, the "national institutions" model, strongly supported by past reputational ratings surveys, appears quite limited in its utility in describing the relationships among American higher education institutions.

There was also, however, little evidence for the "invisible colleges" model. While the tighter clustering of citations from community colleges to other institutions of the same type, and the stronger regional focus of these citations are suggestive, the degree of concentration of the citations and the level of cross-citation found were not sufficient to argue for an "invisible college" of community colleges. It may be that better data from a more carefully designed study could indicate the existence of such invisible colleges. In the empirical study of citation networks among scholars, typically one must examine a set of journals over a period of time to determine the interrelationships. This little snapshot of a study may have provided too few data of the right kind to illustrate the networks of relationships among sets of institutions.

One other aspect of the data which deserves highlighting suggests that there are "two cultures" within American higher education. It will come as no surprise to careful observers of our higher education system to learn that community colleges are different from four-year and graduate institutions. The separation into two systems of higher education, however, seems particularly strikingly in this citation data. While the two

groups came to a strong agreement on national leading institutions, there was little overlap in the specific institutions named on any of the other questions. This was most starkly demonstrated when the respondents were asked about innovation. The most frequently cited institution among community colleges (referenced by almost one-third of the responding institutions) received almost no mentions among four-year and graduate level institutions. Conversely, the high rate of referencing liberal arts colleges found among four-year and graduate institutions was not mirrored in the citations of community colleges. The two groups seem to have distinctly different reference groups.

In final analysis, the major results of this study are negative. The results call into serious question unitary concepts of leadership and the utility of unidimensional listings of leading "national" institutions. To understand more fully the complex character of the relationships among institutions of higher education, more careful work needs to be undertaken. The results of this study suggest that such future work might fruitfully depart from reputational ratings surveys to examine more directly indices of the quality of educational programs, cases of innovation and real evidence of influences of one educational program on that of other institutions.

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Notes

1. The questions asked on the survey were:

   1. What colleges, universities or agencies have, in the past, influenced the present structure of your educational program? Please list five in order of importance.

   2. If a new instructional program were proposed at your institution, what other colleges or universities might you consider consulting or examining as a model in order to help you decide what action you should take? Please list five in order of likelihood.

   3. What colleges and or universities do you think have the most influence at the national level on the educational programs of other institutions of higher education? Please list five in order of importance.

   4. What five other colleges or universities do you regard as most like your institution in educational program? Please list in order of similarity.

   5. What colleges and/or universities do you regard to be currently most "innovative" in their educational programs, i.e., most likely to try new approaches to teaching or new programs of instruction? "Innovative" here is not meant to imply that the new techniques are successful or even educationally beneficial, but rather only that they differ significantly from present standard practice. List five in order of "innovativeness."

   6. What colleges and/or universities do you feel would have the widest national reputation for being "innovative"? List five in order of reputation.

2. In checking for proportion of responses from various types of institutions, two categorizations were used. The Carnegie categories were used as reported in A Classification of Institutions of Higher Education. Berkeley, California. The Carnegie Commission on Higher Education. 1973. Geographic regions used were the 10 regions defined by the Department of Health, Education and Welfare.

   The proportion of institutions that responded in relation to each category were: Carnegie category 1 (public) .23, Carnegie category 1 (private) .27, Carnegie category 2 (public) .20, Carnegie category 2 (private) .26, Carnegie category 3 (public) .20 Carnegie category 3 (private) .22, Carnegie category 4 (public) .24 and Carnegie 4 (private) .93. The latter group comprises an extremely small number

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of institutions, and almost all responded. However, even this high response rate accounts for only a little over 7% of all respondents. When the response rate was analyzed by geographic region using HEW regional boundaries I found the following: region I, .21, region II, .24, region III, .18, region IV, .18, region V, .23, region VI, .31, region VII, .21, region VIII, .24, region IX, .27, and region X, .26. The relatively small degree of oversampling appears in institutionally sparsely populated regions with the undersampling occurring in regions more heavily populated by institutions.

3. The institutions most likely to be mentioned as having national influence in alphabetical order were: Columbia, Harvard, Massachusetts Institute of Technology, Princeton, Stanford, University of California, Berkeley, University of California, Los Angeles, University of Chicago, University of Michigan and Yale University. The rank orderings among these institutions varied somewhat depending on the referring institution's Carnegie category.

4. When citing innovative institutions, there is strong agreement on only Antioch College across all four Carnegie categories. Among community colleges, however, Antioch takes second place in the citations to Miami Dade Community College. A number of other institutions received multiple citations and indeed there is agreement across Carnegie categories 1-3 on four other institutions that rank very high. However, because of the tremendous scatter of citations in this category and the relatively small proportion of agreement, there is little justification for listing other institutions.

RRJ D13/B12

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RRJ D13/B10